
Lighting: Exterior Lighting

Description

This requirement mandates high efficacy lighting for exterior applications in residences. The intent is to require compact fluorescent lighting for porches and other exterior applications. This measure would ensure that:

- Typical outdoor lighting equipment would either be compact fluorescent (CF), HID, or motion controlled. If not motion controlled, lighting would be high efficacy, thereby using less Watts than typical incandescent lighting. If motion controlled, lights could be tungsten, since they would be off a majority of the time.
- Tungsten lighting can still be used in the mountains where compact fluorescent lamps may have difficulty starting in extremely cold environments.

§150

Exterior lighting for residences shall employ high efficacy source(s).

Exceptions:

- 1. Exterior luminaires installed in climate zones 14 or 16.*
- 2. Low voltage luminaires rated 50 Watts or less.*
- 3. Luminaires directly controlled by a motion-sensing device.*
- 4. Lighting used in or around swimming pools, water features, or other locations subject to Article 680 of the 2001 California Electrical Code.*

Benefits

Exterior lighting is a significant energy end-use in California. When poorly designed, it can also contribute to light trespass and pollution. This measure will require high efficacy lighting, saving energy and realizing other environmental benefits. It is estimated that the measure will save at least 25 Watts per luminaire, with typical savings between 60-80 Watts.

Environmental Impact

Environmental impact will be positive. While there may be some minor increases in mercury related to fluorescent and other high efficacy lighting, this increase will be offset by the benefit of reductions in air-borne mercury from reduced energy generation at power plants.

Type of Change

This change would be a mandatory measure in §150. It would need to be described in the Residential Manual and it would probably be beneficial for the Commission to develop and disseminate a fact sheet to all electrical manufacturers and distributors, prior to implementing the measure.

Measure Availability and Cost

Many manufacturers of residential grade outdoor lighting in the U.S. produce, or could easily produce, products to meet this measure. Prices, availability, and selection of current products are reasonable and would become even more so, if this measure passes. Products on the market now can be purchased at Home Depot, Lowes, etc.

Useful Life, Persistence and Maintenance

Lamp life will be lengthened; therefore the affected lighting will require less maintenance by the owner. The definition of high efficacy lighting prohibits line voltage, medium-based sockets.

Performance Verification

No performance verification is needed. Plan check and field inspection is easy for this requirement.

Cost Effectiveness

The cost effectiveness of this requirement will be studied in later project tasks. Complying products typically cost between \$10-\$20 more than comparable incandescent products.

Analysis Tools

This measure would be implemented as a mandatory measure and no analysis tools would be needed to show compliance. The cost effectiveness calculations would use simple calculations based on typical hours of exterior lighting operation, as well as the power differences between conventional incandescent sources and the high efficacy lighting required by this measure.

Relationship to Other Measures

This measure relates to other exterior lighting measures to be considered by the CEC.

Bibliography and Other Research

Public Interest Energy Research (PIER) is being conducted on exterior lighting. The research being done as part of this task will be coordinated with that effort.